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ABSTRACT

Because a critical issue in current assessment efforts is the widespread use of technically inadequate tests, the study examined tests chosen by 159 school professionals during a computer simulation of placement decision making about potentially handicapped students. Chi square analysis showed technically adequate devices were chosen proportionately more often than technically inadequate devices when norms were considered. This differentiation was not found when adequacy was defined by validity and reliability. The author concluded that more emphasis is needed in training school professionals on the importance of technically adequate assessment devices. (Author/CL)

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University of Minnesota

Research Report No. 9

TECHNICAL ADEQUACY OF TESTS USED BY PROFESSIONALS IN SIMULATED DECISION MAKING

James E. Ysseldkye, Bob Algozzine, Richard Regan, and Margaret Potter

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I. Adequacy of Norm-Referenced Data for Prediction of Success

II. Computer Simulation Research on the Assessment/Decision-making/Intervention Process

III. Comparative Research on Children Labeled LD and Children Failing Academically but not Labeled LD

IV. Surveys on In-the-Field Assessment, Decision Making, and Intervention

V. Ethological Research on Placement Team Decision Making

VI. Bias Following Assessment

VII. Reliability and Validity of Formative Evaluation Procedures

VIII. Data-Utilization Systems in Instructional Programming

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July 1979

Abstract

A critical issue in current assessment efforts is the widespread use of technically inadequate tests. This study looked at the technical adequacy of tests chosen by 159 school professionals during a computer simulation of placement decision making. Chi square analysis showed technically adequate devices were chosen proportionately more often than technically inadequate devices when norms were considered ($p < .05$). This differentiation was not found when adequacy was defined by validity and reliability ($p > .05$). More emphasis on the importance of technically adequate assessment devices is needed in training school professionals.

Technical Adequacy of Tests Used by Professionals in Simulated Decision Making[1]

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Educational personnel routinely use tests to gather information for the purpose of making psychoeducational decisions about students. The decisions that are made can have a significant effect on the students' life opportunities. When data are collected using tests, it is imperative that the tests used be technically adequate (Salvia & Ysseldyke, 1978; Ysseldyke, 1978, 1979). Ysseldyke (1979) reported that one of the most critical issues in current assessment efforts is the widespread use of technically inadequate tests in decision making.

A computer simulated decision-making program was constructed to study the extent to which professionals use technically adequate tests in making placement decisions about students.

Methodology

Development of a Computer Simulated Decision-Making Program

A computer simulated decision-making program was developed for the purpose of studying the process diagnostic personnel go through in making decisions about potentially handicapped students. Figure 1 is a flow chart illustrating steps in the simulation program.

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Insert Figure 1 about here

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Initially, the program pretest collected demographic data on the participants and assessed their knowledge base in psychoeducational

FEB 13 1980

assessment. Participants were then provided bogus referral information and were instructed that they were to make a placement decision for the hypothetical referred student. They were told that the computer could provide them with scores and qualitative information regarding the pupil's performance on a variety of tests in seven domains. Participants indicated domains in which they wanted information, and then selected specific tests on which they wanted scores and/or qualitative information.

Participants were allowed to continue selecting domains and specific tests on which they wanted to see information until they indicated they were ready to make a placement decision (or until 25 minutes had elapsed). Upon indicating their decisions regarding eligibility for services, diagnosis, and prognosis, the participants were asked a series of questions regarding factors that influenced their decision.

One aspect of the simulation program is important for the purposes of this study, specifically, the devices that individuals selected during decision making.

Creation of an Archive of Test Data

As reported above, the simulation program provided participants with data on specific tests. All data were within the average range of performance for a pupil of the age referred. Participants were allowed free selection of devices to be used in decision making. Tests included were those that Thurlow and Ysseldyke (1979) had shown were most frequently used in making decisions about learning disabled students.

The list of tests included both technically adequate and technically inadequate devices. Technical adequacy was evaluated on three dimensions:

norms, reliability, and validity. First, tests that did not include this information in their manuals were judged technically inadequate. The investigators did not go beyond manuals in search of research on the tests; we believe test authors must report the data in their manuals. Second, criteria specified by Salvia and Ysseldyke (1978), by Ysseldyke (1978), and in the APA Standards document (1972) were used to evaluate the technical adequacy of the tests.

The devices available for selection during the simulated diagnostic session and their technical adequacy relative to norms, reliability, and validity are listed in Table 1. Twenty-four percent (i.e., 12 of 49) of the devices were rated as having technically adequate norms and validity; thirty-three percent were rated as having adequate reliability: sixty-five percent were rated as having inadequate norms; fifty-nine percent as having inadequate reliability; and sixty-seven percent as having inadequate validity.

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Insert Table 1 about here

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Subjects

Subjects were 159 professionals from public and private schools in Minnesota. All participants were volunteers who had previously participated in at least two placement team meetings. Disciplines represented within the sample include regular education teachers (N = 55), special education teachers (N = 47), administrators (N = 16), school psychologists (N = 25), and support personnel (e.g., social worker, nurse, etc.) (N = 16).

Procedures

Data were collected using a Telray remote computer terminal and were accessed by the Cybernet network. All data were collected in the professionals' home school districts. Each subject participated in the interactive program for approximately 45 minutes.

Results

The extent to which technically adequate or inadequate devices were selected during the diagnostic simulation may be derived from Table 2; presented is the total number of times the devices were selected.

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Insert Table 2 about here

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Analyses of the results of three separate Chi square tests suggested that individuals tended to select devices with similar technical characteristics for reliability and validity (e.g., $\chi^2 < 1.0$) but that their choices with regard to the technical quality of the tests' norms were differentially distributed ($\chi^2 = 46.43$ $p < .05$). Specifically, subjects selected more test devices with technically adequate norms and fewer devices with technically inadequate norms than might be expected by chance.

Discussion

That professionals who engage in assessment of children should do so with technically adequate devices seems an obvious requirement and/or recommended practice. Salvia and Ysseldyke (1978) have pointed out that a number of the currently popular assessment devices used

by special educators are technically inadequate based on professional standards for best practices (APA, 1972). No controls exist through which the publication of tests with inadequate norms, reliability, and/or validity may be monitored; the burden of appropriate selection and use then rests with the professional who engages in psychoeducational assessment.

The extent to which professionals (i.e., school psychologists, special education teachers, etc.) selected technically adequate or inadequate devices during a diagnostic simulation was addressed by this research. An analysis of the results suggested that school personnel tended to select devices with technically adequate reliability and validity as often as they selected devices with inadequate reliability and validity. With regard to test norms, however, participants tended to select devices judged to have adequate norms more often than they selected inadequately normed devices.

The participants in this study were all individuals who had already participated in making placement decisions. We believe it is imperative that increasing attention be given in both inservice and preservice training to the importance of technical adequacy in the selection of instruments for use in decision making.

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Footnote

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Table 1

Technical Adequacy of Devices Used in Computer Simulation Study

Test	Norms	Reliability	Validity
Intelligence Tests			
Stanford Binet	+	-	-
WISC-R	+	+	+
Slosson	-	-	-
McCarthy Scales of Children's Abilities	+	+	+
Full Range Picture Vocabulary Test	-	-	-
Quick Test	-	-	-
Peabody Picture Vocabulary Test	-	+	+
Goodenough-Harris Drawing Test	-	-	-
Henmon-Nelson Tests of Mental Ability	-	-	-
Kuhlmann-Anderson Intelligence Tests	+	+	+
Otis-Lennon Mental Ability Test	+	+	+
Primary Mental Abilities Test	-	+	+
Achievement Tests			
California Achievement Test	-	+	-
Iowa Test of Basic Skills	+	-	-
Metropolitan Achievement Test	-	+	-
Stanford Achievement Test	+	+	+
Gates-MacGinitie Reading Tests	-	+	-
Peabody Individual Achievement Tests	+	+	+
Wide Range Achievement Test	-	+	-
Gray Oral Reading Test	-	-	-
Gilmore Oral Reading Test	-	-	-
Gates-McKillop Reading Diagnostic Tests	-	-	-
Durrell Analyses of Reading Difficulty	-	-	-
Stanford Diagnostic Reading Test	+	+	+
Diagnostic Reading Scales	-	-	-
Woodcock Reading Mastery Test	+	+	+
Key Math Diagnostic Arithmetic Test	-	-	-
Stanford Diagnostic Mathematics Test	+	+	+
Diagnosis: An Instructional Aid in Math	CR	CR	CR
Perceptual-Motor Tests			
Bender Visual-Motor Gestalt	-	-	-
Developmental Test of Visual Perception	-	-	-
Memory for Designs Test	-	-	-
Developmental Test of Visual-Motor Integration	-	-	-
Purdue Perceptual-Motor Survey	-	-	-

Test	Norms	Reliability	Validity
Behavioral Recordings			
Frequency Counting or Event Recordings	SC	SC	SC
Interval or Time Samplings	SC	SC	SC
Permanent Products	SC	SC	SC
Peterson-Quay Behavior Problem Checklist	-	-	-
Personality Tests			
Piers-Harris Self-Concept Scale	-	-	-
Rorschach-Inkblot Technique	-	-	-
School Apperception Method	-	-	-
Thematic Apperception Test	-	-	-
Adaptive Behavior Scales			
AAMD Adaptive Behavior Scale	-	-	-
AAMD Adaptive Behavior Scale (School Version)	+	-	-
Vineland Social Maturity Scale	-	-	-
Language Tests			
Goldman-Fristoe Test of Articulation	CR	+	+
Auditory Discrimination Test	-	-	-
Northwestern Syntax Screening Test	-	-	-
Illinois Test of Psycholinguistic Abilities	-	-	-

Table 2

Frequency of Use of Devices According to Selected Technical Characteristics

	Technical Characteristics		
	Adequate	Inadequate	Other
Type Characteristic			
Norms	341	585	84
Reliability	327	602	81
Validity	251	678	81

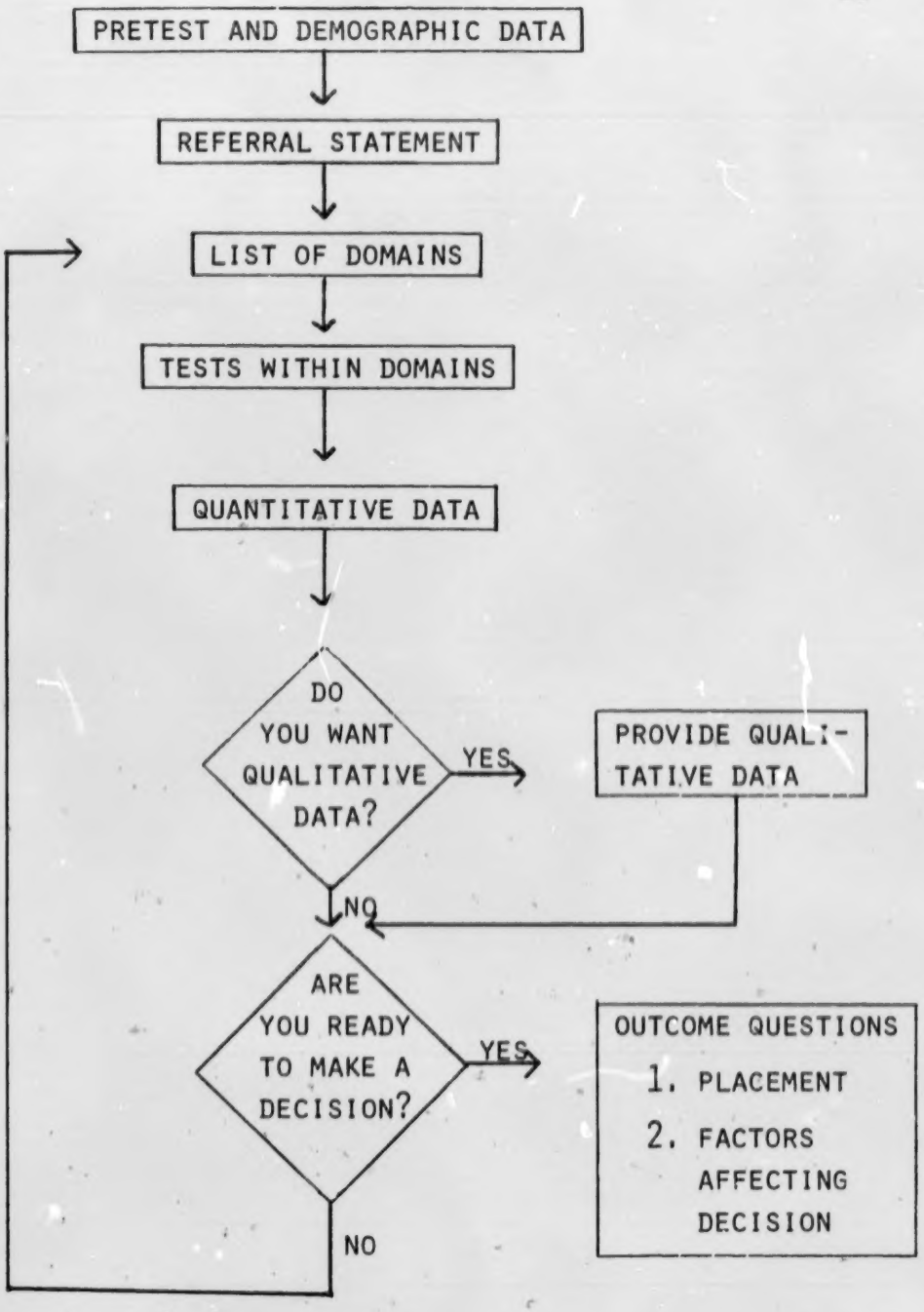

Figure 1. Flow Chart illustrating the Diagnostic Simulation Program.

PUBLICATIONS

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